

Comment on Spectrum Needs of Emergency Response Providers

Submitted by:
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Radio spectrum, a vital resource for protecting lives and property, has become dangerously scarce across the nation, most notably in crowded metropolitan areas such as Westchester County. The public safety community in Westchester is unable to obtain sufficient radio spectrum to meet existing needs, much less plan for future, more advanced communications requirements. Although a limited amount of spectrum has been allocated for public safety use by the Federal Communications Commission (FCC), much of it will be unavailable until at least 2007 due to interference, or rendered incompatible with existing equipment used for countywide voice communications. Nevertheless, Westchester County continues to approach emergency response management pragmatically, supporting commonsense spectrum policies and a mix of technologies that help fill remaining gaps in our nation's emergency communications infrastructure. The Alert chip, or "A-chip," is one such technology that will be discussed here.

With a population nearing 1 million people, two active nuclear reactors, the water supply for 9 million residents of New York City and Westchester County, major commuter rail lines and interstate highways, an airport that is only minutes flying time from mid-town Manhattan, large gas, electric and communication "central" lines which, if lost, would have a regional impact, and the headquarters to several Fortune 500 companies, Westchester County is an ideal place to understand the potential impact of the radio spectrum deficit

facing public safety and emergency workers. As a suburban county, just north of New York City, Westchester demonstrates the kinds of communications issues that arise in the handling of incidents - both large and small - that do not limit themselves neatly to one side of a municipal border.

Westchester County also offers, in microcosm, the common picture of multiple first response agencies. In addition to the County Government's special services in Hazmat, bomb squad, fire training and the like, Westchester has more than 40 other police departments, 58 local fire departments (comprised of career, volunteer firefighters or a combination of the two), 42 emergency medical service agencies, and more than 50 public safety answering points in our 911 system. Day-to-day, the County Government ensures that the communications network underlying these activities is working and dispatches a majority of the fire departments in the County.

Moreover, the County Government plays a critical role in coordinating these agencies, especially in the face of a major emergency. In the absence of true interoperability between all of these agencies, the County is the only mechanism for these various units to coordinate their activities. However, by the standard Federal definition, the County Government is not considered a "first responder," and is therefore ineligible to receive funding to improve the communications for first responders. Westchester County strongly recommends that Federal law be amended to reflect the involvement of agencies that handle communications (like the County) in addition to those that physically respond to an everyday incident.

In the first hours following the attack of September 11, 2001, the only way we could coordinate the sharing of firefighting, Medical Examiner, Health and Information Technology resources with New York City officials was through the highly trained, volunteer Amateur Radio (ham) operators. This was a result of the fact that normal commercial communications services

were unavailable, including wireless cellular phones. There was no other single, common communications medium, except the Amateur Radio Service. This irreplaceable resource must be protected against incursion by other interests.

In the past, an answer to the needs of public safety, particularly police, was the use of radios in the 800 MHz band. Indeed, some of Westchester's police departments use such frequencies in their local areas. However, the County never received an allocation of 800 MHz frequencies from the FCC and is not able to get any because it sits in a large metropolitan area where these frequencies are already licensed to other jurisdictions, such as New York City. There have been numerous complaints across the country of interference with these frequencies by commercial wireless services. Nevertheless, the FCC should be commended for its decision to reconfigure the 800 MHz band through its Report and Order (WT Docket No. 02-55).

Regardless of the outcome of these rebanding efforts, it is clear that 800 MHz, in our area, has not fulfilled its promise as the single frequency range for first responder coordination and communications. And while it is true that the FCC's recent decision in the 800 MHz band reconfiguration proceeding created access to an average of 4.5 megahertz of additional spectrum for public safety licenses, there are still no safeguards in place ensuring the proper allocation of these frequencies. It is strongly recommended that new users, those currently without access to spectrum in the 800 MHz band, be given preference over entities already enjoying the benefits of these licenses.

Westchester County supports the FCC plan to allocate spectrum in the 700 MHz range for public safety (24 of the 97 megahertz of spectrum recently allocated by the FCC in support of public safety communications is in the 700 MHz band). Compared with spectrum in the 4940 – 4990 MHz range, the 700 MHz spectrum is far better suited for metro and wide-area communications voice and data services. Also, unlike with 4940 – 4990, radio

equipment can be designed for use in both the 700 MHz and 800 MHz band where spectrum is already available for the public safety community. The need to provide additional allocations in this band is heightened by the delay in its availability due to continued interference. In New York, a large portion of the northern part of the state unfortunately faces interference from Canadian users of the same frequencies. In the New York City metropolitan area, including the suburban counties of the lower Hudson Valley, these frequencies are in use by broadcast television stations. As a result, it will be 2007 at the earliest that Westchester could access these frequencies (it is estimated that television stations will broadcast all or most of their programs digitally by that time).

The County will continue to advocate a more just distribution of additional frequencies in the 700 MHz band and urge the FCC to examine the current use of reallocated television spectrum, such as channel 16, in the area. Illustrating the disparity in spectrum among regions, Westchester County, with approximately 1 million residents, has 76 frequencies for public safety use, whereas New York City has closer to 600 frequencies. With only a handful of frequencies to work with in several disparate bands, the County is unfortunately unable to create the cohesive communications system established in neighboring NYC.

Further threatening the cohesiveness of communications systems based on the 700 MHz band are the FCC's plans to split the band into voice channels in such a way that it will not support the more advanced forms of communications that are increasingly needed and that emerging technology is making possible. Moreover, it is increasingly important for Congress and other top-level decision-makers to realize that traditional solutions do not reflect the future needs of public safety communications and will not meet the more demanding needs of first responders. That traditional solution is to simply provide them with an adequate radio that allows them to talk. Voice communication is essential, but so is the ability to deliver data and video.

The first responders need information, like floor plans, on-demand video instructions on how to recognize a contagious disease, details from a geographic information system, transmission of medical data from patients, a view from inside a school building, and the ability to show and discuss what is happening at an incident to an emergency operations center miles away. These are only some examples of the extraordinary expansion of first responder communications capabilities that would be possible, if the spectrum for public safety were managed for the future and not the past.

This is certainly not without precedent.

When the suburban counties in metropolitan Washington, DC, realized their failure to properly coordinate in the face of a plane crash into one bridge and then a “jumper” off another bridge, they organized to create an advanced data network (CapWIN), forgoing the simple but perhaps inadequate solution of buying more traditional radios. This has become an enormous success for them, even though they are dependent upon a variety of commercial communications services.

There do exist, though, examples of modern first responder communications technology that operate even in the unlicensed 2.4 Gigahertz range. They exemplify spectrum efficiency because of their reliance on the communications protocols of the Internet. Moreover, these same protocols allow for easy interoperability between agencies with a variety of different radio, voice, video and other equipment. Wi-Fi, part of the 802.11 family of standards, is the fastest growing, most competitive, least expensive and most innovative sector of the communications market.

These are impressive technologies, but the problem is they are dependent upon unlicensed frequencies that are getting more crowded and commercialized. Public safety, emergency managers and first responders must have reliable delivery of the information required for proper decision-making and the protection of people's lives. They need sufficient and reliable spectrum to use these modern technologies - but without worry about being crowded out.

In recognition of the need for broadband and advanced technology applications in support of public safety, the FCC decided to allocate to public safety about 50 megahertz of spectrum in the 4.9 gigahertz range. Although this appears to be a good first step forward, it is less than the 100 or 200 Megahertz originally anticipated for these needs; it excludes communications to police surveillance helicopters; and there is potential interference from powerful Navy radio equipment, especially in the more populated coastal areas of the country. Therefore, out of the 97 megahertz of spectrum allocated in support of public safety communications by the FCC, only 23 megahertz is viable in either band since, if you recall, the 24 megahertz in the 700 MHz band is unusable until at least 2007. This is far too little for the emergency response community in Westchester to support its residents in the most critical of times.

Regarding the potential for existing and future commercial wireless communications networks to assuage deficits in spectrum, it must be underscored that the critical communication needs of public safety agencies can only be safely met through the use of dedicated public safety spectrum and infrastructure. The use of commercial wireless services to supplement the capabilities of dedicated public safety systems may be appropriate, but only when such use is strictly limited to non-critical applications.

In fact, there is even some risk in relying on commercial carriers for seemingly non-critical supplemental capabilities. It is dangerously easy for users to become accustomed to having access to commercially provided services such as mobile data and push-to-talk voice, and then forget that these services are not reserved for their use or guaranteed to be available when needed. Cell carriers should therefore be required to provide preemptive priority to cancel non-emergency conversations when necessary. It is worrisome that the major cell carriers in this area have not established any kind of priority system.

In addition, today's commercial services are designed to support the needs of the general public during normal conditions, and are subject to either routine coverage outages or service failures resulting from high traffic volumes during unusual circumstances. Given the inevitable importance of cell phone communications to talk with the public during an emergency, the federal government should prevent debilitating outages by requiring continuous power backup at the cell tower site.

Without a federal mandate, commercial carriers will remain obligated first and foremost to their shareholders, and make strategic technical and operational decisions on their behalf. In contrast, public safety agencies require communications systems whose operation is focused only on serving the specific needs of public safety users.

Further, as a result of continued shortages in spectrum, the County has been obliged to think of creative ways to ensure its residents' safety, including legislative action. A recent proposal submitted on behalf of the County Executives of America advocated the nationwide introduction of an Alert chip, or A-chip, as well as legislation that would empower local governments to initiate Emergency Alert System (EAS) alerts as official "first responders" in their jurisdictions.

The national EAS is pertinent to this comment on spectrum needs because it is part of a web of technologies that must be harnessed effectively and relied upon to meet the needs of emergency response providers. As currently configured, the EAS is inadequate for fully alerting the public about terrorist attacks or providing information on how to respond. So far there has been interest but little action within the federal government to develop a more efficient nation-wide warning system. In its analysis of communications systems, the 9/11 Commission Report strongly suggests that the United States needs a more robust emergency alert system. Former FCC Chairman Michael Powell concluded that EAS, dormant on 9/11, has "fallen into disarray and needs major reform."

Particularly worrisome is that EAS is unable to alert those who are sleeping or not listening to a radio or television. With the A-chip embedded, televisions and radios would turn on automatically when EAS warnings are broadcast, would get the attention of listeners and then provide initial instructions to the public. No other technology can accomplish this same job.

Just as televisions of a certain size must now be equipped with the V-Chip, manufacturers could install the inexpensive A-chip in all new television sets and radios. This seamless integration would ensure more widespread emergency preparedness and save consumers the expense and inconvenience of buying a separate device for public safety use.

Moving forward, there are five necessary actions that Congress and the FCC are encouraged to take to help facilitate the first responder communications system that people deserve:

- The FCC must make additional spectrum available soon. Westchester and similar communities across the country cannot wait for a years-long regulatory process. Regarding spectrum in the 700 MHz band, television channels 63 through 69 should be designated exclusively for government use. Although moving television stations to other frequencies or to cable/satellite is difficult and politically unpopular, it can and should be accomplished through effective campaigning on local, state, and federal levels. Specifically, frequencies in the 482 – 512 MHz band (commonly referred to as television channels 16 through 20) ought to be designated for public safety interoperability and to satisfy general spectrum needs of emergency responders.
- Second, make sure that commercial or other interests will not encroach or interfere with this allocation of spectrum, as has been the case with the previous 800 MHz and 700 MHz plans. This also means that the new spectrum allocation would be exclusively for public safety and emergency response use of governments or their

agents. In the case of Westchester County, that definition includes our public transportation system, which plays an essential role in evacuating the public from harm, especially schoolchildren.

- Third, we encourage the FCC to adopt a more modern approach to allocating these frequencies, in accordance with the more modern digital technologies they say they want to support. Rather than slicing up the spectrum into less usable allocations to individual agencies, it would make sense to dedicate the whole swath of this spectrum to encourage the deployment of a wireless, secure, Internet-like data network modeled on the way that 2.4 Gigahertz works. Bearing in mind the public safety purpose of 4.9 Gigahertz, the FCC would then permit only authorized agencies to send data over an infrastructure built out by regional organizations.
- Fourth, while modern communications technology is much cheaper to deploy than traditional radio systems, it is not free. Like other local and state governments around the country, Westchester has mostly footed the bill for homeland security on its own, but cannot afford to build out the communications infrastructure or continue to spend to keep up with the improvements in technology. Because the absence of adequate financial resources is such a threat to progress, Westchester supports the creation of trust funds in direct support of advancing this nation's communications infrastructure. Considering that Federal emergency management agencies will also be able to use the new spectrum allocation, the funding will help both the Federal and local governments to protect the public.
- Finally, it is vital for the FCC and Congress to advance legislation that ensures a more well-rounded emergency communications infrastructure and expands the scope of the discussion surrounding spectrum management. The Alert chip, as described here, is an excellent example of technology that should be used to fix an ailing

Emergency Alert System and support overall emergency response efforts being hampered by spectrum deficits. Unlike the still uncertain digital technology currently being tested by the Federal Emergency Management Agency that can transmit text, voice and video messages to wireless devices, radios, televisions and the Internet, the A-chip is a reliable broadcast mechanism. There is certainly room for both technologies in the future of emergency communications, and Westchester is hopeful that the FCC, Congress and others will pave the way for their widespread adoption.